ZF MicroSystems, Incorporated ▪ 1052 Elwell Court, Palo Alto, CA 94303 ▪ Tel: 650 965-3800 ▪ Fax: 650 965-4050

General Description

The ZF netDisplay OEM computer integrates a PC/AT compatible motherboard, an LCD flat panel and a 10baseT Ethernet interface into a compact, reliable assembly ideal for both networked and stand-alone embedded applications. The ZF netDisplay is available with an 8" passive or 12" active matrix color display. The device contains all standard PC/AT motherboard functionality including serial and parallel I/O, digital I/O(SystemCard only), floppy and EIDE disk controllers, an SVGA display controller for flat panel support, user-available internal flash, CompactFlash socket, JEDEC byte-wide sockets (SystemCard only), PC/104 expansion bus, and AT-compatible BIOS.

Features

CPU

- Full 32-bit internal architecture
- Cost-effective 16-bit external bus
- Virtual memory, paging and hardware enforced protection
- Physical memory space up to 32 MB on the SystemCard or 18MB on the104Card/EV

DRAM Controller Supports

- High-performance multiplexed DRAM interleave, CPU pipelined operation
- 2MB DRAM in the OEMmodule
- 16MB additional DRAM soldered on-board
- Supports an additional 16MB DRAM soldered on-board (SystemCard only)
- Page mode and EDO DRAM supported
- Shadow RAM
- Multiple context EMS support

PC Core Logic with PC/AT Compatibility

- DMA controllers
- Interrupt controllers
- Timer/counters
- AT keyboard controller
- Real-time clock

ISA Bus

- Compliant with standard PC/AT expansion bus with an IRQ and DMA channel subset
- Supports PC/104 implementation

Fail-safe Boot ROM™

- Embedded ROM
- Boot to a pre-determined, factory defined state regardless of the internal BIOS flash memory's condition
- Full flash memory restore functionality via the serial port
- Recover easily from the corruption or loss of CPU boot data

Ethernet Controller

- 10BaseT (twisted-pair), 10M bits/s
- IEEE 802.3 and Ethernet standards
- LNKST and RCV LED verification
- Network Boot PROM capability
- Supports Microsoft's Plug and Play System configuration
- NOS support, including Novell NetWare, Microsoft Windows 95 and LAN Manager, SCO UnixWare, IBM
- LAN Server, SunSoft PC NFS and Solaris, Artisoft LANtastic, Banyan Vines

Digital I/O (SystemCard only)

- 12 bits of TTL input or output

Serial Ports

- Two 16550-compatible serial ports (104Card/EV)
- Three 16550-compatible RS-232 serial ports (SystemCard) and one 16550-compatible RS-485 serial port

Parallel Port

- Two fully compatible PC/AT parallel printer ports, plus bi-directional operation (EPP) (SystemCard)
- One fully compatible PC/AT parallel printer ports, plus bi-directional operation (EPP) (104Card/EV)

Flat-Panel Display Interface

- Chips And Technologies 65545 Flat Panel/CRT GUI accelerator
- Hardware windows acceleration
- 512K byte video memory
- Supports 8 to 24-bit data interfaces
- Power-sequencing controls for Vdd, Vee, and +12V to inverters

Floppy Disk Controller

- Software compatible with the 765B controller
- Integrated digital data separator capable of data transfer rates up to 2Mbps

EIDE Hard Drive Interface

- Full 40-pin interface to standard EIDE hard disk drive
- Up to two EIDE drives (master/slave)
- Supports CompactFlash™

Solid State Flash Memory Devices

- Internal resident flash disk (RFD) available for DOS and OEM software use - normally the boot drive
- One 32-pin expansion sockets for JEDEC byte-wide memory Flash EPROMs or NVRAM (2-12MB) (SystemCard only)
- Expandable by adding CompactFlash

Watchdog Timer

- Programmable tickle sources
- Automatic reset or NMI (jumper selectable) if user application goes out of control

PC BIOS

- Standard AT BIOS functionality
- Support for OEM add-ons and special customization
- Set-up information stored in non-volatile flash EPROM allows battery-free operation

Electrical Specifications

- 5 volt only ±5% operation
- Requires 5VDC @ 1.3 A (0 MB Socketed DRAM)

Mechanical Specifications

- SystemCard - Size: 5.7” x 8.0” (145 mm x 202 mm)
- 104Card/EV - Size: 3.6” x 3.8” (91.6mm x 96.7mm)
- PC/104 bus header
- Standard ribbon cable connectors
- Weight: (with 8” display) 1.5 lbs. (672 gm)

Environmental Specifications

- Operating temperature
  - 50°F to 104°F (10°C to 40°C)
- Storage temperature
  - -4°F to 140°F (-20°C to 60°C)
- Relative humidity
  - 5% to 85% non-condensing

Flat Panel Display Specifications

- 8.2” Passive Matrix Color Display
  - Resolution: 640 x 480
  - Viewing angle: 40°
  - Brightness: 70/100 cd/m2
  - Contrast ratio: 25 min., 50 typical
- 12.1” Active Matrix Color Display
  - Resolution: 800 x 600
  - Viewing angle: 160°
  - Brightness: 70/150 cd/m2
  - Contrast ratio: 100 min., 150 typical

Optional Touch Screen (8.2” or 12.1”)

- Resistive technology
- High resolution: 4096 x 4096
- Transparency: 80% ±5%
- Operating life: 35 million touches

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ORDERING INFORMATION

ZF netDisplay includes 2MB DRAM, 2MB flash, 10BaseT Ethernet, SVGA controller, speaker interface, and BIOS. Does not include external DRAM or flash, technical manuals or cables.

ND1-486-Q-01 (SystemCard, 12-inch TFT Active Matrix LCD)

ND1-486-Q-02 (SystemCard, 12-inch TFT Active Matrix LCD, Touchscreen)

ND2-486-Q-01 (SystemCard, 8-inch STN Passive Matrix LCD)

ND2-486-Q-02 (SystemCard, 8-inch STN Passive Matrix LCD, Touchscreen)

ND3-486-Q-01 (104Card, 12-inch TFT Active Matrix LCD)

ND3-486-Q-02 (104Card, 12-inch TFT Active Matrix LCD, Touchscreen)

ND4-486-Q-01 (104Card, 8-inch STN Passive Matrix LCD)

ND4-486-Q-02 (104Card, 8-inch STN Passive Matrix LCD, Touchscreen)

ZF netDisplay development kits includes 2MB DRAM, 2MB flash, 10BaseT Ethernet, SVGA controller, speaker interface, and BIOS. Includes technical manuals and cables.

ND1-486-K-02 (SystemCard, 12-inch STN Active Matrix LCD, Touchscreen)

ND2-486-K-02 (SystemCard, 8-inch STN Passive Matrix LCD, Touchscreen)

ND3-486-K-02 (104Card, 12-inch TFT Active Matrix LCD, Touchscreen)

ND4-486-K-02 (104Card, 8-inch STN Passive Matrix LCD, Touchscreen)

netDisplay Products

The netDisplay is a subassembly that consists of various independent units. The key elements of this subassembly are the following:

a) ZF SystemCard or ZF 104Card/EV. These network ready boards provide many additional features such as serial ports, parallel ports, and digital I/O (SystemCard only). The flat panel support is incorporated as well as memory expansion to 18MB and solid state flash memory devices. A complete description of this board is included as part of this documentation set (ZF SystemCard Data Book or ZF 104Card/EV Data Book).

b) Flat panel display. Two flat panel displays are available, an 8.2" Passive Matrix Color Display (640 x 480 resolution, with a brightness of 70-100 cd/m2) and a 12.1" Active Matrix Color Display (800 x 600 resolution, with a brightness of 70-150 cd/m2). Additional details about these color panels are described in the documents entitled 8.2" Data Manual or 12.1" Data Manual. Great care should be used when handling the displays to prevent scratching the surface of the device.

c) Backlight power supply. Customized backlight power supplies to insure proper performance of the LCD displays.

d) Cables. The cables necessary to interconnect the various assemblies are included. All cables should be inspected before powering the device up since shipment may have unseated a cable.

e) Brackets. The brackets provide a mounting mechanism to the OEM's proprietary equipment. Included are two sketches showing the position of the mounting holes for the two netDisplay sizes and the overall dimensions of the device.

Optionally a touch screen can be added to the sub-assembly that includes the following assemblies:

1) An 8.2" or 12.1" touch screen. The device uses resistive technology with a resolution of 4096 x4096, a transparency of 75% to 87.5% with an operating life of 35 million touches. These touch screens are provided attached to the netDisplay with double sided tape. This tape is intended to hold the assembly in place during shipment and assembly into the OEM's unit. Additional support mechanisms must be provided within the OEM assembly to insure the correct placement of the touch screen, considerations to prevent dust from impacting visibility may also be required depending on the OEM application. A sketch showing the dimensions of the touch screen is included.

2) A touch screen interface card to the SystemCard or 104Card/EV. This board converts the position on the touch screen to serial data (factory installed on COM2).

3) Touch screen drivers. Device drivers are provided for the DOS, Win3.x and Windows95 operating systems. The appropriate driver must be installed based upon the operating system chosen for a specific application.

Reference Materials

- ZF MicroSystems SystemCard Data Book 9100-0017-00
- ZF MicroSystems 104Card/EV Data Book 9100-0032-00
- ZF MicroSystems netDisplay Touchscreen Data Book 9110-0001-00
- Hitachi 8.2" Flat Panel Specifications 9110-0002-00
- Hitachi 12.1" Flat Panel Specifications 9110-0003-00

MANUAL REVISIONS

Page	Revision	Date
All	NetDisplay Release x	1019/98
All	netDisplay Release x1	10/20/98
All	netDisplay Release x2	3/18/99

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